

U140F AUTOMATIC TRANSAXLE

SERVICE DATA

AUTOMATIC TRANSMISSION ASSEMBLY

Line pressure (Wheel locked) AT stall (Throttle valve fully opened)	D position	931 to 1,031 kPa (9.1 to 10.5 kgf*cm ² , 129 to 149 psi)
	R position	1,768 to 1,968 kPa (18.0 to 20.0 kgf/cm ² , 284 to 256 psi)
Engine stall revolution	D positions	2,400 to 2,700 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.2 seconds
Engine idle speed (A/C OFF)	N position	610 to 710 rpm
Drive plate runout	Maximum.	0.20 mm (0.0079 in.)
Differential oil seal drive in depth	LH side	5.4 to 6.4 mm (0.213 to 0.252 in.)
	RH side	1.5 to 2.5 mm (0.059 to 0.098 in.)
Shift point		
D position (Throttle valve fully opened)	1 → 2	55 to 63 km/h (34 to 39 mph)
	2 → 3	102 to 112 km/h (63 to 70 mph)
	3 → 4	156 to 171 km/h (97 to 106 mph)
	4 → 3	148 to 163 km/h (92 to 101 mph)
	3 → 2	94 to 104 km/h (58 to 65 mph)
	2 → 1	44 to 51 km/h (27 to 32 mph)
D position (Throttle valve fully closed)	3 → 4	40 to 47 km/h (25 to 29 mph)
	4 → 3	16 to 22 km/h (10 to 14 mph)
2 position (Throttle valve fully opened)	1 → 2	55 to 63 km/h (34 to 39 mph)
	3 → 2	102 to 112 km/h (63 to 70 mph)
	2 → 1	32 to 39 km/h (20 to 24 mph)
L position (Throttle valve fully opened)	3 → 2	102 to 112 km/h (63 to 70 mph)
	2 → 1	48 to 55 km/h (30 to 34 mph)
Lock-up point		
D position (Throttle valve opening 5 %)	Lock-up ON 4 → 4L	53 to 60 km/h (33 to 37 mph)
	Lock-up OFF 4L → 4	51 to 58 km/h (32 to 36 mph)
Input shaft		
End play	0.262 to 1.249 mm (0.0103 to 0.0492 in.)	
Multiple disc clutch clutch hub		
Inside diameter	STD	23.025 to 23.045 mm (0.9065 to 0.9073 in.)
	Max.	23.09 mm (0.9091 in.)
Underdrive brake		
Return spring free length	14.04 mm (0.5528 in.)	
Pack clearance	1.81 to 2.20 mm (0.0713 to 0.0866 in.)	
Flange thickness	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.2 mm (0.126 in.)
	Mark 3	3.4 mm (0.134 in.)
2nd brake		
Pack clearance	0.62 to 0.91 mm (0.0244 to 0.0358 in.)	
Return spring free length	16.61 mm (0.6539 in.)	

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Flange thickness	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.1 mm (0.122 in.)
	Mark 3	3.2 mm (0.126 in.)
	Mark 4	3.3 mm (0.130 in.)
	Mark 5	3.4 mm (0.134 in.)
	Mark 6	3.5 mm (0.138 in.)
	Mark 7	3.6 mm (0.142 in.)
1st and reverse brake		
Pack clearance	1.10 to 1.29 mm (0.0433 to 0.0508 in.)	
Return spring free length	15.51 mm (0.6106 in.)	
Flange thickness	Mark 1	1.8 mm (0.071 in.)
	Mark 2	1.9 mm (0.075 in.)
	Mark 3	2.0 mm (0.079 in.)
	Mark 4	2.1 mm (0.083 in.)
	Mark 5	2.2 mm (0.087 in.)
	Mark 6	2.3 mm (0.091 in.)
	Mark 7	2.4 mm (0.094 in.)
	Mark 8	2.5 mm (0.098 in.)

OIL PUMP

Body clearance	STD	0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Max.	0.17 mm (0.0067 in.)
Tip clearance	STD	0.07 to 0.15 mm (0.0028 to 0.0059 in.)
	Max.	0.15 mm (0.0059 in.)
Side clearance	STD	0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Max.	0.05 mm (0.0020 in.)
Drive gear thickness	Mark 1	10.690 to 10.699 mm (0.4209 to 0.4212 in.)
	Mark 2	10.700 to 10.709 mm (0.4213 to 0.4216 in.)
	Mark 3	10.710 to 10.720 mm (0.4217 to 0.4220 in.)
	Mark 4	10.721 to 10.730 mm (0.4221 to 0.4224 in.)
	Mark 5	10.731 to 10.740 mm (0.4225 to 0.4228 in.)
Driven gear thickness	Mark 1	10.690 to 10.699 mm (0.4209 to 0.4212 in.)
	Mark 2	10.700 to 10.709 mm (0.4213 to 0.4216 in.)
	Mark 3	10.710 to 10.720 mm (0.4217 to 0.4220 in.)
	Mark 4	10.721 to 10.730 mm (0.4221 to 0.4224 in.)
	Mark 5	10.731 to 10.740 mm (0.4225 to 0.4228 in.)
Pump body bushing inside diameter	STD	38.113 to 38.138 mm (1.50050 to 1.50149 in.)
	Max.	38.138 mm (1.50149 in.)
Oil seal in depth	STD	0 +- 0.5 mm (0 +- 0.020 in.)
Stator shaft bushing inside diameter	STD	21.500 to 21.526 mm (0.84646 to 0.84748 in.)
	Max	21.526 mm (0.84748 in.)

SECOND BRAKE PISTON

Piston return spring free length	18.99 mm (0.7476 in.)
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FORWARD CLUTCH

Pack clearance		1.74 to 2.08 mm (0.0685 to 0.0819 in.)
Piston return spring free length		28.23 mm (1.1102 in.)
Flange thickness	No. 1	3.00 mm (0.1181 in.)
	No. 2	3.15 mm (0.1240 in.)
	No. 3	3.30 mm (0.1299 in.)
	No. 4	3.45 mm (0.1358 in.)
	No. 5	3.60 mm (0.1417 in.)

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DIRECT CLUTCH

Pack clearance		0.605 to 0.825 mm (0.02382 to 0.03248 in.)
Piston return spring free length		22.58 mm (0.8898 in.)
Flange thickness (Direct clutch)	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.1 mm (0.122 in.)
	Mark 3	3.2 mm (0.126 in.)
	Mark 4	3.3 mm (0.130 in.)
	Mark 5	3.4 mm (0.134 in.)
	Mark 6	3.5 mm (0.138 in.)

UNDERDRIVE PLANETARY GEAR

Turning torque (at 60 rpm)	0.10 to 4.41 N*m (1.0 to 45 kgf*cm, 0.9 to 39 in*lb)
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UNDERDRIVE CLUTCH

Pack clearance		1.51 to 1.90 mm (0.0594 to 0.0748 in.)
Piston return spring free length		17.14 mm (0.6752 in.)
	Mark 1	3.0 mm (0.118 in.)
	Mark 2	3.2 mm (0.126 in.)
	Mark 3	3.4 mm (0.134 in.)
U/D clutch drum bushing inside diameter	STD	37.06 to 37.08 mm (1.4591 to 1.4598 in.)
	Max.	37.13 mm (1.4618 in.)

TRANSMISSION VALVE BODY ASSEMBLY

Valve body assembly installation bolt length	25 mm (0.984 in.) for bolt A
	41 mm (1.614 in.) for bolt B
	45 mm (1.771 in.) for bolt C
Detente spring installation bolt length	27 mm (1.063 in.) for bolt A
	16 mm (0.630 in.) for bolt B

DIFFERENTIAL

Side gear backlash		0.05 to 0.20 mm (0.0020 to 0.0070 in.)
Thrust washer thickness	Mark -	1.625 mm (0.0640 in.)
	Mark -	1.725 mm (0.0679 in.)
	Mark -	1.825 mm (0.0719 in.)
Preload (turning torque at 60 rpm))	New bearing	0.20 to 0.69 N*m (2.0 to 7.0 kgf*cm, 1.8 to 6.1 in.*lbf)
	Using bearing	0.10 to 0.35 N*m (1.0 to 3.6 kgf*cm, 0.9 to 3.1 in.*lbf)

Shim thickness	Mark 0	2.00 mm (0.0787 in.)
	Mark 1	2.05 mm (0.0807 in.)
	Mark 2	2.10 mm (0.0827 in.)
	Mark 3	2.15 mm (0.0846 in.)
	Mark 4	2.20 mm (0.0866 in.)
	Mark 5	2.25 mm (0.0886 in.)
	Mark 6	2.30 mm (0.0906 in.)
	Mark 7	2.35 mm (0.0925 in.)
	Mark 8	2.40 mm (0.0945 in.)
	Mark 9	2.45 mm (0.0965 in.)
	Mark A	2.50 mm (0.0984 in.)
	Mark B	2.55 mm (0.1004 in.)
	Mark C	2.60 mm (0.1024 in.)
	Mark D	2.65 mm (0.1043 in.)
	Mark E	2.70 mm (0.1063 in.)
	Mark F	2.75 mm (0.1083 in.)
	Mark G	2.80 mm (0.1102 in.)
	Mark H	2.85 mm (0.1122 in.)

TORQUE SPECIFICATIONS

Automatic Transaxle Assembly

Part Tightened		N*m	kgf*cm	ft.*lbf
Park/neutral position switch	Nut	6.9	70	61 in.*lbf
	Bolt	5.4	55	48 in.*lbf
Control shaft lever x Control shaft		12.7	130	9
Shift control cable x Control shaft lever		15	153	11
Transaxle housing x Engine block	A bolt	64	653	47
	B bolt	46	470	34
	Lower side bolt	37	377	27
Torque converter clutch x Drive plate		41	418	30
Engine mounting bracket FR x Transaxle		64	653	47
Oil filler tube x Transaxle		5.5	56	49 in.*lbf
Control cable bracket No.1 x Transaxle		12	122	9
Oil cooler tube clamp x Control cable bracket		5.4	55	48 in.*lbf
Oil cooler inlet tube x Transaxle		34	347	25
Oil cooler outlet tube x Transaxle		34	347	25
Starter x Transaxle		37	377	27
Wire harness x Transaxle		13	133	10
Speed sensor (NC) x Transaxle		11	115	8
Speed sensor (NT) x Transaxle		11	112	8
Air cleaner x No. 1 air cleaner inlet		5.0	51	44 in.*lbf
Drain plug x Oil pan		47	479	35
Transmission wire x Transaxle		5.4	55	48 in.*lbf
ATF temperature sensor x Valve body		6.6	67	58 in.*lbf
Oil pan x Transaxle		7.6	77	67 in.*lbf
Solenoid valve x Valve body	Bolt A	6.6	67	58 in.*lbf
	Bolt B	11	110	8
Valve body x Transaxle		10.8	110	8
Oil strainer x Valve body		11	110	8
Floor shift assembly x Body		12	120	9
Control cable x Body		5.0	51	44 in.*lbf
Transfer x Transaxle		69	704	51
Engine mount bracket RR x Transfer stiffener, plate RH		45	459	34

Automatic Transaxle Unit

Part Tightened		N*m	kgf*cm	ft.*lbf
Differential gear lube apply tube x Transaxle housing		9.8	100	7
Front planetary gear lock nut		268	2,732	198
Brake apply tube clamp x Transaxle case		5.4	55	48 in.*lbf
Transaxle case No. 1 plug x Transaxle rear cover		7.4	75	65 in.*lbf
Transaxle rear cover plate x transaxle rear cover sub-assembly		7.5	76	66 in.*lbf
Transaxle rear cover x Transaxle case	Bolt A	18.6	190	14
	Other bolt	24.5	250	18
Pawl shaft clamp x Transaxle case		9.8	100	7
Oil pump assembly x Transaxle case		22	226	16
Transaxle housing x Transaxle case	Bolt A	22.1	225	16.3
	Bolt B, C	29.4	300	21.7
Transaxle case No. 1 plug x Transaxle housing		7.4	75	65 in.*lbf
Parking lock pawl bracket x Transaxle case		20	205	15

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Part Tightened		N*m	kgf*cm	ft.*lbf
Detent spring x Transaxle case	Bolt A	20	205	15
	Bolt B	12	120	9
Solenoid wire retaining bolt x Transaxle housing		5.4	55	48 in.*lbf
Transmission valve body x Transaxle case		11	110	8
ATF temperature sensor clamp x Valve body		6.6	67	58 in.*lbf
Valve body oil strainer x Transmission valve		11	110	8
Automatic transaxle oil pan sub-assembly x Transaxle case		7.8	80	69 in.*lbf
Speed sensor x Transaxle case		11.3	115	8
Transmission revolution sensor x Transaxle case		11.3	115	8
Oil cooler tube union x Transaxle case		27	276	20
Oil cooler tube union x Transaxle case		27	280	20
Speedometer driven hole cover sub-assembly x Transaxle case		7.0	70	61
Oil pump body x Stator shaft assembly		9.8	100	7
Under drive planetary gear x Lock nut		280	2,855	207
Line pressure control solenoid assembly x Transmission valve body assembly		11	110	8
No. 1 clutch control solenoid assembly x Transmission valve body assembly		11	110	8
Automatic transmission 3 way solenoid assembly x Transmission valve body assembly		11	110	8
No. 2 clutch control solenoid assembly x Transmission valve body assembly		11	110	8
No. 2 transmission 3 way solenoid assembly x Transmission valve body assembly		11	110	8
Front differential case x Front differential ring gear		95.1	970	70